STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY4

DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
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TEST METHOD FOR EVALUATING PAINTED METAL TARGET PLATE MATERIAL

CAUTION: Prior to handling test materials, performing equipment setups, and/or conducting this method, testers are required to read "**SAFETY AND HEALTH**" in Part 9 of this method. It is the responsibility of the user of this method to consult and use departmental safety and health practices and determine the applicability of regulatory limitations before any testing is performed.

SCOPE

This test method describes the procedures for evaluating white painted metal used for guide markers, milepost markers, under drain markers, conduit markers, cattle pass markers, clearance markers, and horizontal reflector markers. This test method is divided into the following parts:

1. Dry Film Thickness
2. Coating Hardness
3. Impact Resistance
4. Coating Adherence
5. Chemical Resistance
6. Weatherability by Artificial Accelerated Weathering
7. Specular Gloss
8. Color
9. Safety and Health

PART I. DRY FILM THICKNESS

A. SCOPE

This method describes one of several acceptable ways of determining the dry film thickness of paint on an aluminum substrate. Currently, all painted metal target plates purchased by Caltrans are aluminum.

B. TEST PROCEDURE

Use the apparatus and the procedures as specified in ASTM Designation: D 1400.

PART 2. COATING HARDNESS

A. APPARATUS

1. A set of pencils that meet the requirements in ASTM Designation: D 3363.
2. Fine grit sandpaper or emery cloth is required.

B. TEST PROCEDURE

1. This method describes the procedure for determining the relative hardness of a paint coating.
2. Test the cured coating in accordance with ASTM Designation: D 3363.
3. Report the pencil lead hardness of the paint film.

PART 3. IMPACT RESISTANCE

A. APPARATUS

Avariable impact-testing machine shall conform to the requirements in ASTM Designation: D 2794.

B. TEST PROCEDURE

1. Subject either side of the sample, at 25°C, to an impact force equivalent to 40 inch-pounds.

2. There should be no loss of adhesion, cracking or flaking of the coating at the site of impact.

PART 4. COATING ADHESION

A. TEST PROCEDURE

Test materials in accordance with California Test 645.

PART 5. CHEMICAL RESISTANCE

A. APPARATUS

1. A container capable of accommodating 4 by 8-inch specimens.

2. Mineral spirits.

3. A detergent solution, 0.5 % by volume, (such as Tide or equivalent).

4. Trisodium phosphate solution, 2 % by volume.

5. Soap solution, 2 % by volume (such as Ivory or equivalent).

B. TEST PROCEDURE

1. Cut four 4- by 8-inch specimens from a sample that has been prepared and painted in the same manner as the lot material that is represented by the sample.

2. Totally immerse one specimen each for 24 hr in the four chemical solutions. Remove, rinse in clear water, and allow 24-hr recovery prior to evaluation.

3. Report the appearance of the specimens. There should be no loss of adherence or gloss, no color change or staining.

PART 6. WEATHERABILITY BY ARTIFICAL ACCELERATED WEATHERING

A. APPARATUS

1. Test apparatus described in ASTM Designation: G 155, using the method described in Table X3.1, Cycle 1.

B. TEST PROCEDURE

1. From a coated target plate, cut a coupon the correct size to fit into the artificial weathering apparatus.

2. Place in the instrument for 1000 hr of exposure.

3. Remove panel and measure the daylight luminous directional reflectance in accordance with Part 8 of this test method.

PART 7. SPECULAR GLOSS

A. TEST METHOD

1. Use the apparatus and procedures specified in ASTM Designation: D 523.

2. Report the gloss reading at 60° geometry.

PART 8. COLOR

A. TEST METHOD

Test in accordance with California Test 660 or use the procedures and apparatus described in ASTM Designation: E 1164 or E 1347. The measurement geometry shall be Normal/45° or 45°/Normal.

Plot the x and y chromaticity coordinates on a chromaticity chart compiled according to the 1931 CIE Standard Observer Coordinate System. The percent purity is read directly from the chart. Record the daylight luminous directional reflectance ("Y" value) reading on the chart.

PART 9. SAFETY AND HEALTH

Prior to handling, testing or disposing of any waste materials, testers are required to read: the Caltrans Laboratory Safety Manual. Users of this method do so at their own risk.

REFERENCES:
ASTM Designations: B 117, D 523, D 1400, D 2794, D 3363, E 1164, E 1347 and G 155
California Tests 645 and 660
Caltrans Laboratory Safety Manual

End of Text
(California Test 671 contains 3 pages)